

WHAT IS CLAIMED IS:

1. A facilitated transport membrane for separating alkene hydrocarbons from hydrocarbon mixtures, comprising a porous supported membrane and a transition metal salt-polymer membrane consisting of a transition metal salt and a polymer, in which the transition metal salt is not dissolved in the polymer to make a polymer solution but physically dispersed within the polymer which has no functional group capable of forming a complex with the transition metal salt.
2. The facilitated transport membrane according to Claim 1, wherein a cation of the transition metal salt has the electronegativity of 1.8~2.3.
3. The facilitated transport membrane according to Claim 2, wherein the transition metal is one selected from the group consisting of Mn, Fe, Co, Ni, Cu, Mo, Tc, Ru, Rh, Pd, Ag, Re, Os, Ir, Pt, and isomers and complexes thereof.
4. The facilitated transport membrane according to Claim 1, wherein the transition metal salt has a lattice energy of less than 2500 kJ/mol.
5. The facilitated transport membrane according to Claim 4, wherein an anion of the transition metal salt is one selected from the group consisting of F^- , Cl^- , Br^- , I^- , CN^- , NO_3^- , SCN^- , ClO_4^- , $CF_3SO_3^-$, BF_4^- , AsF_6^- , PF_6^- , SbF_6^- , $AlCl_4^-$, $N(SO_2CF_3)_2^-$ and $C(SO_2CF_3)_3^-$.

6. The facilitated transport membrane according to Claim 1, wherein the transition metal salt includes a complex salt of the transition metal or a mixture of the salts of the transition metal.
7. The facilitated transport membrane according to Claim 1, wherein the polymer is one selected from the group consisting of polyolefins, polysiloxanes, and copolymers and mixtures thereof.
8. The facilitated transport membrane according to Claim 7, wherein the polymer is one selected from the group consisting of polyethylene, polypropylene, polyethylene-co-propylene copolymer, polydimethyl siloxane, and copolymers and blends thereof.
9. The facilitated transport membrane according to Claim 1, wherein the porous supported membrane is a porous polymer membrane or ceramic membrane used in the preparation of a conventional composite membrane.
10. The facilitated transport membrane according to Claim 1, wherein the hydrocarbon mixtures to be separated contain at least one alkene hydrocarbon and/or at least one alkane hydrocarbon and/or other gas.
11. The facilitated transport membrane according to Claim 9, wherein the alkene hydrocarbon is one selected from the group consisting of ethylene, propylene, butylene, 1,3-butadiene, isobutylene, isoprene and mixtures thereof, the alkane hydrocarbon is one selected from the group consisting of methane, ethane, propane, butane, isobutane,

pentane isomers and mixtures thereof, and other gas is one selected from the group consisting of oxygen, nitrogen, carbon dioxide, carbon monoxide, water and mixtures thereof.